Declassified in Part - Sanitized Copy Approved for Release 2012/08/22 : CIA-RDP79B00873A001600040037-4

D 55-605769
15 May 69

NPIC/TSSG/DED-1603-69

FILE 50019

MEMORANDUM FOR : Director, National Photographic Interpretation Center

SUBJECT : Proposed Contract with [redacted] 25X1

1. This memorandum requests approval for the commitment of funds for a contract. The specific request is stated in Paragraph 6.

2. The proposed research project is a continuation of a series of projects designed to relate image quality to the interpretability of specific target types. The first study considered the resolution requirements for interpreting offensive missile sites. The second study helped evaluate the resolution required for interpreting imagery of Sino-Soviet mobile radars. It is now proposed to extend this research to targets related to ground order-of-battle. Specifically, the project would study the effects of ground resolution on the interpretability of ground force equipment; and relate the results to a recently completed study of line-scan imagery of the same targets [redacted] 25X1 25X1

The purpose for acquiring this type of data is to define for the community, the image quality necessary for NPIC to interpret the various target classes. Collection system planners can then use this data as an indicator for determining the level of sophistication which must be designed into a proposed collection system. It is an established fact that the higher the resolution, the higher the cost of the total system. In fact, this cost-versus-resolution relationship is exponential--a small increase in image resolution increases the system cost enormously. The present state of development of acquisition systems is at a point at which increased resolution may not prove profitable in terms of the resultant intelligence output.

As a result of the first two studies, the resolution requirements for interpreting ICBM's and mobile radars are now known. The first two studies prove that resolution and target interpretability are directly related to the EEI's (Essential Elements of Information) of a specific target class and to the unique peculiarities of that particular type of target. It also proved that resolution requirements which were determined for missiles and radars cannot be extrapolated to determine resolution requirements for ground force targets (tanks, trucks, etc.); therefore, this research should be extended to these types of targets.

Declassified in Part - Sanitized Copy Approved for Release 2012/08/22 : CIA-RDP79B00873A001600040037-4

SECRET
Declassified in Part - Sanitized Copy Approved for Release 2012/08/22 : CIA-RDP79B00873A001600040037-4

SUBJECT: Proposed Contract with [redacted] 25X1

3. The question of the smallest dimension that must be imaged in order to obtain the desired intelligence requires applied research before a reliable answer can be obtained. The current magnitude of ground force weapons and equipment is too great to attempt to answer the question comprehensively in one single study. The proposed program will first employ models and calibrated targets to establish the range of resolutions required; this is Phase I. A Phase II follow-on effort is planned for FY-70 using real GOB equipment in the field to establish more definitive resolution values over a broader range of targets. Determination of the technical requirements for the follow-on project will be accomplished as part of this (FY-69) program.

A psychophysical experiment employing NPIC interpreters will provide the data for the proposed study. Images of scale models of known dimensions and resolution values will be photographed in the laboratory. At the same time, line-scan images of similar resolution will be prepared using the [redacted] Line Scan Image Generator. Interpretation of 25X1
the resulting images under controlled conditions will then be accomplished. Reports of interpreted features will be equated, at each resolution step along with the photographic ground resolution required to produce the information to be exploited. In turn, this data will provide the information necessary to accomplish the follow-on effort utilizing real equipment and imagery.

The experience gained from prior projects in this series indicates that the objectives established can be met within the six months allowed.

4. The theory and the experimental techniques involved in the proposed program have been employed successfully in the previous studies sited; consequently, the risk involved is correspondingly low.

In addition to the regular monthly progress/financial reports, a final report conteining the initial resolution relationships and the ground truth information required for the subsequent program will be delivered at the conclusion of the contract.

5. [redacted] was selected sole source 25X1
to perform this work because this is a follow-on contract and because of their prior experience and their unique knowledge acquired during their participation in the previous studies. The program has been closely coordinated with the IEG. Operational requirements for PI participation will be incorporated in the estimated 50 manhours previously agreed upon for the line scan study involving missile and radar targets.

SECRET
Declassified in Part - Sanitized Copy Approved for Release 2012/08/22 : CIA-RDP79B00873A001600040037-4

Declassified in Part - Sanitized Copy Approved for Release 2012/08/22 : CIA-RDP79B00873A001600040037-4

SECRET

SUBJECT: Proposed Contract with [redacted] 25X1

6. No detailed cost estimate of the follow-on work is possible at this time but it will be approximately [redacted] It is requested that the negotiation with [redacted] for a contract to conduct Phase I of the program described, at a cost not to exceed [redacted] be approved. 25X1 25X1 25X1

[redacted] 25X1

Chief, Technical Services & Support Group,
NPIC

Attachments:

[redacted] 25X1
25X1

APPROVED: [redacted] 9 MAY 1969

ARTHUR C. LUNDAHL
Director
National Photographic Interpretation Center

Date

Distribution:
Orig - NPIC/TSSG/SSD/LB (After approval)
1 - NPIC/ODir
1 - NPIC/TSSG
1 - NPIC/TSSG/SSD
1 - NPIC/TSSG/DED

SECRET

Declassified in Part - Sanitized Copy Approved for Release 2012/08/22 : CIA-RDP79B00873A001600040037-4